

REMARKS

The foregoing amendments and the following remarks are submitted in response to the Final Office Action dated May 12, 2009. Entry and favorable consideration thereof is requested.

*Status of the Claims*

Claims 15-17, 19, 22 and 23 are pending in the application. Claims 15, 16, 19 and 22 have been canceled without prejudice. Claims 17 and 23 have been amended and are presented as independent claims. Amendments to claims 17 and 23 are provided in order to more particularly point out and distinctly claim that which Applicants regard as the invention, including to incorporate the limitations of the claims from which they previously depended. Support for the amended claims can be found generally through Applicants' specification and/or in the previously pending claims.

With respect to all amendments and canceled claims, Applicant has not dedicated or abandoned any unclaimed subject matter and, moreover, has not acquiesced to any rejections and/or objections made by the Patent Office. Applicant reserves the right to pursue prosecution of any presently excluded claim embodiments in future continuation and/or divisional applications.

*Claim Rejections – 35 USC § 112, First Paragraph*

The Examiner has rejected claims 15 and 16 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors had possession of the claimed invention at the time the application was filed. Applicants traverse this rejection. Applicants point out that out that rejected claims 15 and 16 have above been canceled without prejudice, rendering the rejection against these claims moot.

Claims 19 and 22 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors had possession of the claimed invention at the time the

application was filed. Applicants traverse this rejection. Applicants point out that out that rejected claims 19 and 22 have above been canceled without prejudice, rendering the rejection against these claims moot.

***Claim Rejections – 35 USC § 112, Second Paragraph***

The Examiner has rejected claims 15-17, 19 and 22-23 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 15 and 19 are rejected as vague, indefinite and confusing in the recitation “at least two therapeutically effective synergistic bacteriophage derived lytic enzymes obtained from bacteriophage”, the Examiner alleging that the terms “bacteriophage derived” appear redundant and should be deleted. Applicants respectfully traverse this rejection. Applicants point out that claims 15, 16, 19 and 22 have above been canceled without prejudice, rendering the rejection against these claims moot. Claims 17 and 23 have been above amended, without acquiescing to the Examiner and without prejudice to further or future prosecution, including to incorporate the limitations of their prior claims. Applicants note that, in the incorporated language of now amended claims 17 and 23, the term “bacteriophage derived” has been deleted. Applicants respectfully submit that this rejection has been properly and fully addressed and request its withdrawal.

In addition, the term “synergistic” is objected to, the Examiner remarking that it renders claims 15 and 19 confusing, vague, and indefinite since there is no clear indication of the amount, identity or source of the enzymes and for what purpose. In addition, the Examiner remarks, there is no indication as to the substrate upon which the enzymes are synergistic, in other words, the subject of the “killing” is not delineated sufficiently. Applicants respectfully traverse this rejection and submit that it is clear to the skilled artisan, including from a reading of the claims and the specification, and given their knowledge, what is meant by the claimed invention. Nevertheless, without acquiescing to the Examiner and without prejudice, Applicants have above canceled claims 15 and 19 and amended claims 17 and 23 including to incorporate the limitations of their prior claims. Applicants note that, in the incorporated language of now

amended claims 17 and 23, the term “synergistic” has been deleted and the subject of the killing, either anti-pneumococcal killing or *Streptococcus pneumoniae* killing, is clearly and specifically delineated. Applicants submit that instant pending claims 17 and 23 are definite and particularly point out and distinctly claim the subject matter of the invention.

In view of the foregoing amendments and remarks, Applicants submit that the Examiner's rejection under 35 U.S.C. 112, second paragraph, may properly be withdrawn.

***The 35 USC §102 and §103 Rejections***

The Examiner has rejected claims 15 and 19 under 35 U.S.C. 102(b) as anticipated by, or, in the alternative, under 35 U.S.C. 103(a) as obvious over, Fischetti et al (U.S. Patent No. 6,264,945) in light of Marova et al (Folia Microbiol. 38(3):245-252 (1993)). Fischetti et al is cited as teaching a composition compressing at least two therapeutically effective lytic enzymes. The Examiner alleges that Fischetti et al. teaches a composition comprising at least two therapeutically effective lytic enzymes and in particular an amidase, a muramidase, and endopeptidase, a glucosaminidase or combinations thereof. The Examiner alleges that the claimed composition is anticipated Fischetti et al. Applicants respectfully traverse this 102 rejection. To anticipate a claim, a prior art reference must teach or suggest each and every limitation of the claim. Applicants have above canceled claims 15 and 19 and amended dependent (and not rejected) claims 17 and 23 including to incorporate the limitations of their prior claims. Thus, Applicants argue that the rejection of claims 15 and 19 is effectively moot. Further, Applicants respectfully submit that Fischetti et al. does not anticipate claims 17 and 23, because the reference fails to disclose or suggest all elements of claims 17 and 23, including as amended.

In the alternative, the Examiner alleges that the claimed enzyme composition of claims 15 and 19 would have been obvious to those skilled in the art under Fischetti et al in light of Marova et al (Folia Microbiol. 38 (3),245-252 (1993)) within the meaning of 35 U.S. 103. Applicants traverse this 103 rejection. To establish a prima facie case of obviousness, the prior art references must teach or suggest all the claim limitations. Applicants have above canceled

claims 15 and 19 and amended dependent (and not rejected) claims 17 and 23 including to incorporate the limitations of their prior claims. Thus, Applicants argue that the rejection of claims 15 and 19 is effectively moot. Further, Applicants respectfully submit that Fischetti et al., in combination with Marova et al. does not render the now pending claims obvious since the combination of Fischetti et al. and Marova et al. do not teach all elements of claims 17 and 23.

The Examiner has rejected claims 15-17 and 19-23 under 35 U.S.C. 103(a) as being unpatentable over Fischetti et al [I] (U.S. Patent No. 6,264,945) taken with Marova et al (Folia Microbiol 38(3):245-252 (1993)), Fischetti et al [II] (U.S. Patent No. 6,056,954), Sanz et al (Eur. J. Biochem. 187:409-416 (1990)) and Loeffler et al (Science 294:2170-2172 (2001)). Fischetti et al [I] is cited as allegedly teaching a composition comprising at least two therapeutically effective lytic enzymes and in particular an amidase and a muramidase. The Examiner properly acknowledges that Fischetti et al [I] differs from the claimed composition in that it is not “bacteriophage derived” or obtained and in comprising Pal and Cpl-I. The Examiner then alleges, however, that Fischetti [II] strongly suggests the use of several bacteriophage lytic enzymes in combination. Loeffler et al is cited as teaching the favorable properties of the cell wall degrading enzyme Pal, while Sanz et al is cited as teaching the favorable properties of Cpl-1 lysozyme. The Examiner alleges that one would have been motivated in providing a combination of various bacteriophage derived enzymes for the expected benefit of a composition for controlling bacterial pathogens.

Applicants respectfully traverse this 103 rejection and submit that the combination of any combination of Fischetti et al (I) and Marova et al and/or of Fischetti et al (I), Marova et al, Fischetti et al (II), Sanz et al and Loeffler et al. does not render Applicants' claimed invention obvious. First, and importantly, Applicants point out that claims 15, 16, 19 and 22 have been cancelled rendering the rejections of these claims moot. In addition, dependent claims 17 and 23 have above been amended without prejudice, including to incorporate the limitations of their prior claims. Applicants submit that claims 17 and 23, including as above amended, are not anticipated by or obvious in view of Fischetti et al (I) with Marova et al, or in view of the combination of Fischetti et al (I), Marova et al, Fischetti et al (II), Sanz et al and Loeffler et al.

To establish obviousness, a prior art reference, or the combination of references, must teach or suggest each and every element and limitation of the claim. In particular, Applicants underscore that the combination of Fischetti et al (I), Marova et al, Fischetti et al (II), Sanz et al and Loeffler et al does not teach or suggest the claimed compositions, and particularly do not teach or anticipate synergistic combinations of the particular two or more bacteriophage lytic enzymes, particularly with activity against pneumococci as instantly claimed. Also, Applicants point out that claims 17 and 23 as amended clearly delineate the subject of the killing, particularly anti-pneumococcal killing or *Streptococcus pneumoniae* killing. None of the references alone, or in combination teaches or suggests the particular and specific claimed compositions and combinations of Pal and Cpl-1 lytic enzymes, including for use as instantly claimed. In fact, Applicants underscore that the inventors of the instant invention, Vincent Fischetti and Jutta Loeffler, who are also authors of the cited references, would not have and do not deem the synergistic lethal effects and effectiveness of the claimed combination compositions as obvious from even their own prior work. This is demonstrated in their post-filing publication (Loeffler J.M. and Fischetti V.A. (2003) *Antimicrobial Agents and Chemotherapy* 47(1):375-377), (a copy provided herewith and designated on the concurrently filed Supplemental IDS) which is based on the studies described in the instant application. At page 375, Loeffler and Fischetti states:

*We describe here the killing efficacy of a combination of Pal, an amidase with a molecular mass of 34 kDa, and Cpl-1, a phage lysozyme with a molecular mass of 39 kDa, in vitro. Both enzymes have very different N-terminal catalytic sites and share a similar C-terminal cell wall attachment site, which binds to choline in both cases. We set out to test whether the simultaneous use of both enzymes is competitive and therefore antagonistic or simple additive, or whether it may actually enhance the destruction of the cell wall and hence show synergistic lytic action.*

Thus, given that Pal and Cpl-1 share a cell wall attachment site, which binds to choline, it was unclear, untested and unobvious, even to the authors of the Examiner cited references, whether Pal and Cpl-1 would work against one another (ie compete, in both being directed to the same attachment site), work equally in combination (just adding effects), or could possibly have enhanced effects in combination (ie synergize). The 103 cited references do not teach or make obvious what the effect of the combination would be, or even suggest that the specific

combination of Pal and Cpl-1 might be particularly useful, let alone as remarkably effective as they are demonstrated to be in the instant invention in a combination composition. The combination of Fischetti et al (I), Marova et al, Fischetti et al (II), Sanz et al and Loeffler et al does not teach or suggest each and every element of pending claims 17 and 23.

In view of the foregoing amendments and remarks, Applicants submit that the Examiner's 102 and 103 rejections are obviated and request that they be withdrawn.

CONCLUSION

Applicants respectfully request entry of the foregoing amendments and remarks in the file history of the instant Application. The Claims as amended are believed to be in condition for allowance, and reconsideration and withdrawal of all of the outstanding rejections is therefore believed in order. Early and favorable action on the claims is earnestly solicited.

Respectfully submitted,

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